

1 **CLAIMS**

2 **1.** A computer-implemented architecture comprising:

3 one or more first objects that support only static properties; and

4 one or more second objects associated with the one or more first objects
5 and configured to call the one or more first objects to effect one or more property
6 value changes on the one or more first objects in a manner that makes the one or
7 more first objects appear as if they support dynamic properties.

8
9 **2.** The computer-implemented architecture of claim 1, wherein the one or more
10 second objects are configured to maintain property data that is used to call the one
11 or more first objects.

12
13 **3.** The computer-implemented architecture of claim 2, wherein the property
14 data comprises at least one property value change that is to be made.

15
16 **4.** The computer-implemented architecture of claim 2, wherein the property
17 data comprises a time at which a property value change is to be made.

18
19 **5.** The computer-implemented architecture of claim 2, wherein the property
20 data comprises how a property value change is to be made.

1 6. The computer-implemented architecture of claim 2, wherein the property
2 data comprises one or more of the following: at least one property value change
3 that is to be made, a time at which a property value change is to be made, and how
4 a property value change is to be made.

5
6 7. The computer-implemented architecture of claim 2, wherein the property
7 data comprises at least one property value change that is to be made, a time at
8 which a property value change is to be made, and how a property value change is
9 to be made.

10
11 8. The computer-implemented architecture of claim 1 further comprising one
12 or more data structures associated with the one or more second objects, individual
13 data structures containing data that is to be used by the one or more second objects
14 to effect a property value change.

15
16 9. The computer-implemented architecture of claim 8, wherein the one or more
17 data structures comprise an array of one or more sets of data structures, each set of
18 data structures being associated with a property that is to be changed and
19 containing property data that is to be used to change property values for a
20 property.

21
22 10. The computer-implemented architecture of claim 9, wherein the property
23 data comprises at least one property value change that is to be made.
24
25

1 **11.** The computer-implemented architecture of claim 9, wherein the property
2 data comprises a time at which a property value change is to be made.

3
4 **12.** The computer-implemented architecture of claim 9, wherein the property
5 data comprises how a property value change is to be made.

6
7 **13.** The computer-implemented architecture of claim 9, wherein the property
8 data comprises at least one property value change that is to be made, a time at
9 which a property value change is to be made, and how a property value change is
10 to be made.

11
12 **14.** Software code embodied on a computer-readable medium which, when
13 executed by a computer, implements the system of claim 1.

14
15 **15.** A multi-media editing application comprising the computer-implemented
16 system of claim 1.

17
18 **16.** A multi-media project editing architecture comprising:
19 one or more first objects that support only static properties, the one or more
20 first objects being configured to implement a transform associated with processing
21 of a multi-media editing project;

22 one or more second objects associated with the one or more first objects
23 and configured to call the one or more first objects to effect one or more property
24 value changes on the one or more first objects in a manner that makes the one or
25 more first objects appear as if they support dynamic properties; and

1 one or more data structures associated with the one or more second objects,
2 individual data structures containing property data that is to be used by the one or
3 more second objects to effect a property value change.
4

5 **17.** The multi-media project editing architecture of claim 16, wherein the one
6 or more data structures comprise an array of one or more sets of data structures,
7 each set of data structures being associated with a property whose values are to be
8 changed and containing property data that is to be used to change property values
9 for a property.
10

11 **18.** The multi-media project editing architecture of claim 17, wherein the
12 property data comprises at least one value to which a property is to be changed.
13

14 **19.** The multi-media project editing architecture of claim 17, wherein the
15 property data comprises a time at which at least one property value is to be
16 changed.
17

18 **20.** The multi-media project editing architecture of claim 17, wherein the
19 property data comprises how at least one property value is to be changed.
20

21 **21.** The multi-media project editing architecture of claim 17, wherein the
22 property data comprises: at least one value to which a property is to be changed, a
23 time at which at least one property value is to be changed, and how at least one
24 property value is to be changed.
25

1 **22.** Software code embodied on a computer-readable medium which, when
2 executed by a computer, implements the system of claim 16.

3
4 **23.** A multi-media editing application comprising the computer-implemented
5 system of claim 16.

6
7 **24.** A multi-media project editing architecture comprising:
8 a software-implemented matrix switch having multiple input pins and
9 multiple output pins, the multiple input pins being routable to the multiple output
10 pins, the switch being configured to provide a data stream that represents a multi-
11 media project;

12 a data structure associated with the matrix switch and configured for use in
13 programming the matrix switch to provide a routing scheme for routing input pins
14 to output pins;

15 one or more first objects associated with the matrix switch, the one or more
16 first objects supporting only static properties associated with rendering of a multi-
17 media project;

18 one or more second objects associated with the one or more first objects
19 and configured to call the one or more first objects to effect one or more property
20 value changes on the one or more first objects in a manner that makes the one or
21 more first objects appear as if they support dynamic properties.

1 **25.** The multi-media project editing architecture of claim 24 further comprising
2 one or more data structures associated with the one or more second objects,
3 individual data structures containing data that is to be used by the one or more
4 second objects to effect a property value change.

5
6 **26.** The multi-media project editing architecture of claim 25, wherein the one
7 or more data structures comprise an array of one or more sets of data structures,
8 each set of data structures being associated with a property whose values is to be
9 changed and containing property data that is to be used to change property values.

10
11 **27.** The multi-media project editing architecture of claim 26, wherein the
12 property data comprises a property value of a property that is to be changed.

13
14 **28.** The multi-media project editing architecture of claim 26, wherein the
15 property data comprises a time at which a property value is to be changed.

16
17 **29.** The multi-media project editing architecture of claim 26, wherein the
18 property data comprises how a property value is to be changed.

19
20 **30.** The multi-media project editing architecture of claim 26, wherein the
21 property data comprises a property value of a property that is to be changed, a time
22 at which a property value is to be changed, and how a property value is to be
23 changed.

1 **31.** A property value-changing method comprising:
2 providing one or more objects that support only static properties;
3 providing one or more programmable objects configured to effect property
4 value changes on the objects that support only static properties; and
5 effecting at least one property value change on the one or more objects that
6 support only static properties using the one or more programmable objects.

7
8 **32.** The method of claim 31 further comprising programming the one or more
9 programmable objects with property data that is to be used by the one or more
10 programmable objects to effect said at least one property value change.

11
12 **33.** The method of claim 32, wherein the property data comprises one or more
13 property values that are to be changed.

14
15 **34.** The method of claim 32, wherein the property data comprises a time at
16 which a property value is to be changed.

17
18 **35.** The method of claim 32, wherein the property data comprises how a
19 property value is to be changed.

20
21 **36.** The method of claim 32, wherein the property data comprises one or more
22 property values that are to be changed, a time at which a property value is to be
23 changed, and how a property value is to be changed.

0931593 10000

1 **37.** The method of claim 32 further comprising organizing the property data in
2 one or more data structures that are used by the one or more programmable
3 objects.

4
5 **38.** The method of claim 32 further comprising organizing the property data in
6 one or more data structures that are used by the one or more programmable
7 objects, said organizing comprises defining an array of data structures, each array
8 comprising one or more sets of structures and each set being associated with a
9 property whose value can change.

10
11 **39.** The method of claim 31, wherein said effecting comprises calling the one
12 or more objects that support only static properties with the one or more
13 programmable objects.

14
15 **40.** One or more computer-readable media having computer-readable
16 instructions thereon which, when executed by a computer, implement the method
17 of claim 31.

18
19 **41.** A property value-changing method comprising:
20 programming a programmable object with property data that defines when
21 certain property value changes are to be made and what those property value
22 changes are;
23 calling, with the programmable object, one or more objects that do not
24 support dynamic properties; and
25

responsive to said calling, using the property data to effect a property value change on the one or more objects that do not support dynamic properties.

42. The method of claim 41 further comprising calling the programmable object with a time value, the programmable object using the time value to ascertain when to call the one or more objects.

43. The method of claim 41, wherein said programming comprises arranging the property data in a data structure array comprising one or more sets of data structures, each set of data structures being associated with a property whose value is to be changed.

44. One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, implement the method of claim 41.

45. One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, cause the computer to:

- provide one or more objects that support only static properties;
- provide one or more programmable objects configured to effect property value changes on the objects that support only static properties;
- program the one or more programmable objects with property data that is to be used by the one or more programmable objects to effect said at least one property value change, the property data comprising: property value changes that

1 **55.** A multi-media system comprising:

2 an application program configured to enable a user to define a multi-media
3 project in which multiple digital source streams can be combined;

4 a software-implemented matrix switch having multiple input pins and
5 multiple output pins, the input pins being individually associated with inputs that
6 can compete, during a common time period, for a particular output pin that is
7 associated with the matrix switch, the switch being configured to receive, at its
8 input pins, digital source streams;

9 a first data structure associated with the matrix switch and configured for
10 use in programming the matrix switch to provide a routing scheme for routing
11 input pins to output pins such that at any given time, only one input pin is routed
12 to the particular output pin;

13 a second data structure associated with and different from the first data
14 structure, the second data structure representing a user-defined multi-media project
15 and being configured so that the first data structure can be derived therefrom;

16 one or more first objects associated with the matrix switch, the one or more
17 first objects supporting only static properties associated with rendering of a multi-
18 media project; and

19 one or more second objects associated with the one or more first objects
20 and configured to call the one or more first objects to effect one or more property
21 value changes on the one or more first objects in a manner that makes the one or
22 more first objects appear as if they support dynamic properties.

1 **56.** The multi-media system of claim 55 further comprising one or more data
2 structures associated with the programmable object(s), individual data structures
3 containing data that is to be used by the programmable object(s) to effect a
4 property value change.

5
6 **57.** The multi-media system of claim 56, wherein the one or more data
7 structures comprise an array of one or more sets of data structures, each set of data
8 structures being associated with a property value that is to be changed and
9 containing property data that is to be used to change that property value.

10
11 **58.** The multi-media system of claim 56, wherein the one or more data
12 structures comprise an array of one or more sets of data structures, each set of data
13 structures being associated with a property whose value is to be changed and
14 containing property data that is to be used to change that property value, the
15 property data comprising: a property value that is to be changed, a time at which
16 the property value is to be changed, and a manner in which the property value is to
17 be changed.